

6-back

5-back

ANGLE

$$\underline{5} \circ \underline{4} \circ \underline{3} = 60$$

$$\frac{10}{\#} \frac{10}{\#} \frac{10}{\#} \frac{26}{L} \frac{25}{L} \frac{24}{L} = 15,600,000$$

4,368,000

$$\frac{10}{\#} \frac{9}{\#} \frac{8}{\#} \frac{26}{L} \frac{25}{L} \frac{24}{L} = 11,232,000$$

Bowl - order doesn't matter

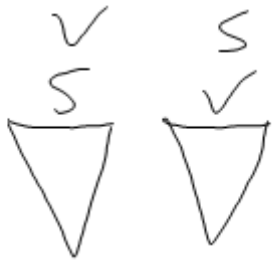
Strawberry chocolate = chocolate & strawberry

Cone - order matters

Strawberry & chocolate different from  
chocolate & strawberry

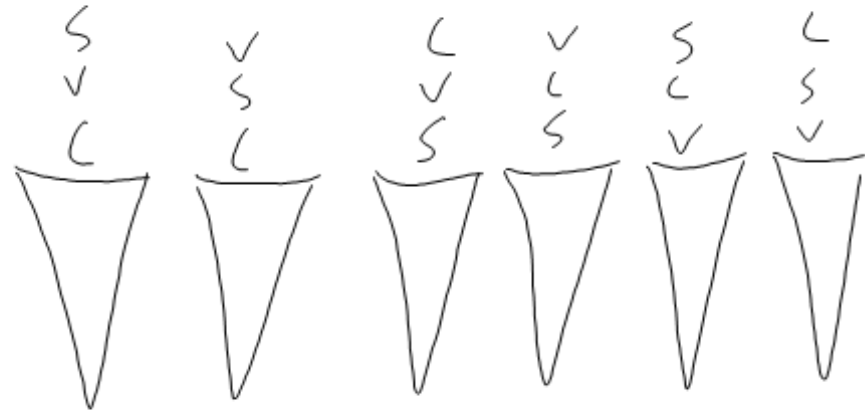
1  
S V

2  
C V



$$2! = 2 \cdot 1 = 2$$

C V S



$$3! = 3 \cdot 2 \cdot 1 = 6$$

24 flavors

3 scoops

Combination - order does not matter  
(Bowl)

$${}_{24}C_3 = \frac{24!}{3!(24-3)!} \quad nCr = \frac{n!}{r!(n-r)!}$$

$\swarrow$  flavors       $\nwarrow$  scoops

Permutation - order does matter  
(cone)

(Comb.) Bowl  $\frac{24 \cdot 23 \cdot 22}{3!}$

$${}_{24}P_3 = \frac{24!}{(24-3)!}$$

(Perm.) cone  $24 \cdot 23 \cdot 22$

$$nP_r = \frac{n!}{(n-r)!}$$

$${}^{30}P_3 = \frac{30!}{(30-3)!} = \frac{30 \cdot 29 \cdot 28 \cdot \cancel{27} \cdot \cancel{26} \cdot \cancel{25} \cdot \cancel{24} \cdots}{\cancel{27} \cdot \cancel{26} \cdot \cancel{25} \cdot \cancel{24} \cdots}$$

Cones

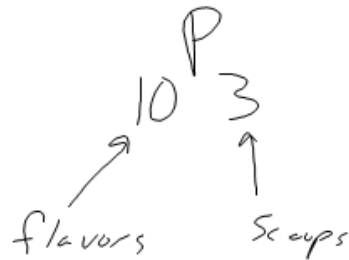
$$= 30 \cdot 29 \cdot 28$$

$${}^{30}C_3 = \frac{30!}{3! (30-3)!} = \frac{30 \cdot 29 \cdot 28 \cdot \cancel{27} \cdot \cancel{26} \cdot \cancel{25} \cdot \cancel{24} \cdots}{3! \cdot \cancel{27} \cdot \cancel{26} \cdot \cancel{25} \cdot \cancel{24} \cdots}$$

Bowls

#1 on purple

Order matters  $\rightarrow$  Permutation  
(one)



$$\frac{10!}{(10-3)!} = \frac{10 \cdot 9 \cdot 8 \cdot \cancel{7} \cdot \cancel{6} \cdot \cancel{5} \cdots}{\cancel{7} \cdot \cancel{6} \cdot \cancel{5}} = 720$$

#3 on yellow

order does not matter  $\rightarrow$  Combination  
(bowl)

$$5C4 = \frac{5!}{4!(5-4)!} = \frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{4! (5-4)!} = \frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot \cancel{1}}{4! \cdot 1}$$

#13 yellow

$$\frac{{}_7C_1}{{}_A \sim S} \cdot \frac{{}_7C_1}{E} \cdot \frac{{}_5C_2}{D} = 490$$

$$\frac{\quad}{\text{Mys.}} \quad \frac{\quad}{\text{Bios.}} = 150$$

HW

Sect. 6.7

# 5, 7, 10-16 (even), 18-20, 46-49